

What is Claimed is:

1. A temperature control system for heating medical items to desired
2 temperatures comprising:

3 a system housing;

4 a heating compartment disposed within said housing to receive at least one
5 medical item;

6 a heating assembly disposed within said heating compartment to heat said
7 compartment and said at least one medical item contained in that compartment, wherein
8 said heating assembly includes:

9 a heating plate to receive said at least one medical item thereon and
10 to distribute heat within said compartment and to said at least one medical item;

11 a heater affixed and applying heat to said heating plate; and

12 a temperature sensor to measure a temperature of said heating plate;

13 and

14 a controller to facilitate entry of a desired temperature and to control a thermal
15 output of said heater to heat said at least one medical item to said entered desired
16 temperature based on said temperature measured by said temperature sensor;

17 wherein said heating plate includes a first wall and a plurality of secondary
18 conducting walls and said heater is attached to and covers selected portions of said first
19 wall to directly apply heat to said first wall;

20 wherein said secondary conducting walls are attached to said first wall at
21 locations outside said selected portions and receive said applied heat through conduction
22 from said first wall, and wherein said first and secondary walls distribute heat in a
23 substantially uniform manner to said at least one medical item disposed between said
24 secondary walls.

1 2. The temperature control system of claim 1, wherein said heating plate has
2 a generally U-shaped configuration with said first wall including a thermally conductive
3 bottom wall and said secondary walls including two thermally conductive side walls
4 extending from said bottom wall, and wherein said heater is affixed to said bottom wall.

1 3. The temperature control system of claim 2, wherein said heater is affixed
2 to an underside of said bottom wall.

1 4. The temperature control system of claim 1, wherein said heating plate
2 includes a protective panel covering at least a portion of said heater to prevent contact
3 between a user and said heater.

1 5. The temperature control system of claim 1, wherein said heating
2 compartment includes a compartment bottom wall configured to receive said heating
3 assembly, and said heating assembly includes a plurality of legs affixed to the underside
4 of said heating plate to elevate and support said heating plate above said compartment
5 bottom wall.

1 6. The temperature control system of claim 1, wherein said heating assembly
2 includes a temperature sensitive switch in communication with said heater, wherein said
3 switch is configured to disable said heater upon measurement of a heater plate
4 temperature in excess of a threshold temperature.

1 7. The temperature control system of claim 1, wherein said controller
2 enables said heater to heat said heating plate in response to said temperature measured
3 by said temperature sensor being below said entered desired temperature and disables
4 said heater in response to said temperature measured by said temperature sensor being
5 at or exceeding said entered desired temperature.

1 8. The temperature control system of claim 1, wherein said controller
2 facilitates entry of said desired temperature via a user input device communicating with
3 said controller.

1 9. The temperature control system of claim 1, wherein said system includes
2 a plurality of heating compartments each having a corresponding heating assembly, and
3 wherein said controller facilitates entry of a plurality of desired temperatures each
4 associated with a corresponding heating compartment, wherein said controller

5 independently controls said heating assemblies to heat said compartments to their
6 corresponding desired temperatures.

1 10. The temperature control system of claim 1, further comprising:

2 a selectively configurable rack structure to partition said compartment into at least
3 one receptacle for receiving said at least one medical item, wherein said rack structure
4 facilitates even heat distribution within said compartment and to said at least one medical
5 item placed therein.

1 11. The temperature control system of claim 10, wherein said rack structure
2 includes at least one support affixed to a first wall of said heating compartment and a
3 plurality of platform members attached to a second wall of said heating compartment and
4 configured to selectively extend toward said at least one support to form said at least one
5 receptacle for receiving said at least one medical item.

1 12. A temperature control system for heating medical items to desired
2 temperatures comprising:

3 a system housing;
4 a plurality of heating compartments disposed within said housing to receive at
5 least one medical item;

6 a plurality of heating assemblies each disposed within a corresponding heating
7 compartment to heat that compartment and said at least one medical item contained in
8 that compartment, wherein each said heating assembly includes:

9 a heating plate to receive at least one medical item thereon and to
10 distribute heat within that compartment and to said at least one medical item contained
11 therein;

12 a heater affixed and applying heat to said heating plate; and
13 a temperature sensor to measure a temperature of said heating plate;

14 and

15 a controller to facilitate entry of desired temperatures for said heating
16 compartments and to independently control a thermal output of each said heater to heat
17 said at least one medical item contained within a corresponding compartment to said

18 entered desired temperature associated with that compartment based on said temperature
19 measured by a corresponding temperature sensor;

20 wherein said controller controls said heating assemblies to heat at least two of
21 said compartments to different desired temperatures.

1 13. A temperature control system for heating items to desired temperatures
2 comprising:

3 a system housing;

4 a heating compartment disposed within said housing to receive at least one item;

5 a heating assembly disposed within said heating compartment to heat said
6 compartment and said at least one item contained in that compartment, wherein said
7 heating assembly includes:

8 a heating plate to distribute heat within said compartment and to said at
9 least one item;

10 a heater applying heat to said heating plate; and

11 a temperature sensor to measure a temperature of said heating plate;

12 a controller to facilitate entry of a desired temperature and to control a thermal
13 output of said heater to heat said at least one item to said entered desired temperature
14 based on said temperature measured by said temperature sensor; and

15 a selectively configurable rack structure to partition said compartment into at least
16 one receptacle for receiving said at least one item.

1 14. The system of claim 13 wherein said rack structure facilitates even heat
2 distribution within said compartment and to said at least one item placed therein.

1 15. The temperature control system of claim 13, wherein said rack structure
2 includes at least one support affixed to a first wall of said heating compartment and a
3 plurality of platform members attached to a second wall of said heating compartment and
4 configured to selectively extend toward said at least one support to form said at least one
5 receptacle for receiving said at least one item.

1 16. The temperature control system of claim 13, wherein said system housing
2 includes a plurality of heating compartments and each compartment includes a
3 corresponding rack structure.

1 17. In a temperature control system having a system housing, a heating
2 compartment disposed within the housing, a heating assembly disposed within the
3 heating compartment and including a heating plate, a heater and a temperature sensor,
4 and a controller for controlling the heating assembly, wherein said heating plate includes
5 a first wall and a plurality of secondary conducting walls, a method of heating medical
6 items to desired temperatures comprising the steps of:

7 (a) receiving at least one medical item on said heating plate within said
8 compartment;

9 (b) facilitating entry of a desired temperature for said compartment via said
10 controller;

11 (c) applying heat directly to said first wall of said heating plate via said heater
12 attached to and covering selected portions of said first wall;

13 (d) conducting said applied heat from said first wall via said secondary walls
14 to distribute heat in a substantially uniform manner to said at least one medical item
15 disposed between said secondary walls, wherein said secondary conducting walls are
16 attached to said first wall at locations outside said selected portions;

17 (e) measuring a temperature of said heating plate via said temperature sensor;
18 and

19 (f) controlling a thermal output of said heater via said controller to heat said
20 at least one medical item to said entered desired temperature based on said temperature
21 measured by said temperature sensor.

1 b 18. The method claim 17, wherein said heating plate has a generally U-shaped
2 configuration with said first wall including a thermally conductive bottom wall and said
3 secondary walls including two thermally conductive side walls extending from said
4 bottom wall and said heater is affixed to said bottom wall, and wherein step (d) further
5 includes:

6 (d.1) conducting said applied heat from said bottom wall via said side walls to
7 distribute heat in a substantially uniform manner to said at least one medical item
8 disposed between said side walls.

1 19. The method of claim 17, wherein said heating plate includes a protective
2 panel covering at least a portion of said heater, and step (a) further includes:

3 (a.1) preventing contact between a user and said heater via said protective
4 panel.

1 20. The method of claim 17, wherein said heating compartment includes a
2 compartment bottom wall configured to receive said heating assembly, and said heating
3 assembly includes a plurality of legs affixed to the underside of said heating plate,
4 wherein step (a) further includes:

5 (a.1) elevating and supporting said heating plate above said compartment
6 bottom wall via said legs.

1 21. The method of claim 17, wherein said heating assembly includes a
2 temperature sensitive switch in communication with said heater, and step (f) further
3 includes:

4 (f.1) disabling said heater via said switch upon measurement of a heater plate
5 temperature in excess of a threshold temperature.

1 22. The method of claim 17, wherein step (f) includes:

2 (f.1) enabling said heater to heat said heating plate in response to said
3 temperature measured by said temperature sensor being below said entered desired
4 temperature; and

5 (f.2) disabling said heater in response to said temperature measured by said
6 temperature sensor being at or exceeding said entered desired temperature.

1 23. The method of claim 17, wherein step (b) further includes:

2 (b.1) facilitating entry of said desired temperature via a user input device
3 communicating with said controller.

1 24. The method of claim 17, wherein said system includes a plurality of
2 heating compartments each having a corresponding heating assembly, and step (a) further
3 includes:

4 (a.1) receiving at least one medical item on said heating plates within said
5 compartments;

6 step (b) further includes:

7 (b.1) facilitating entry of a plurality of desired temperatures each associated
8 with a corresponding heating compartment;

9 step (c) further includes:

10 (c.1) applying heat directly to said first walls of said heating plates via said
11 corresponding heaters attached to and covering selected portions of said first walls;

12 step (d) further includes:

13 (d.1) conducting said applied heat from said first walls of said heating plates
14 via corresponding secondary walls to distribute heat in a substantially uniform manner
15 to said at least one medical item disposed within said compartments between said
16 secondary walls of said heating plates, wherein said secondary conducting walls of said
17 heating plates are attached to corresponding first walls at locations outside said selected
18 portions;

19 step (e) further includes:

20 (e) measuring a temperature of each said heating plate via a corresponding
21 temperature sensor; and

22 step (f) further includes:

23 (f.1) independently controlling each said heating assembly via said controller
24 to heat an associated compartment to a corresponding desired temperature based on a
25 temperature measured by a corresponding temperature sensor.

1 25. The method of claim 17 wherein said system further includes a selectively
2 configurable rack structure, and step (a) further includes:

3 (a.1) partitioning said compartment via said rack structure into at least one
4 receptacle for receiving said at least one medical item; and

5 step (d) further includes:

6 (d.1) facilitating even heat distribution within said compartment and to said at
7 least one medical item placed therein via said rack structure.

1 26. The method of claim 25, wherein said rack structure includes at least one
2 support affixed to a first wall of said heating compartment and a plurality of platform
3 members attached to a second wall of said heating compartment, and step (a.1) further
4 includes:

5 (a.1.1) selectively extending said platform members toward said at least one support to form said at least one receptacle for receiving said at least one medical item.

1 27. In a temperature control system having a system housing, a plurality of
2 heating compartments disposed within said housing, a plurality of heating assemblies
3 each disposed within a corresponding heating compartment and including a heating plate,
4 a heater and a temperature sensor, and a controller for controlling said heating
5 assemblies, a method of heating medical items to desired temperatures comprising the
6 steps of:

7 (a) receiving at least one medical item on said heating plates within said
8 compartments;

9 (b) facilitating entry of a plurality of desired temperatures each associated
10 with a corresponding compartment via said controller;

11 (c) applying heat to said heating plates via a corresponding heater;

12 (d) measuring a temperature of each said heating plate via a corresponding
13 temperature sensor; and

14 (e) independently controlling a thermal output of each said heater via said
15 controller to heat said at least one medical item contained within a corresponding
16 compartment to said entered desired temperature associated with that compartment based
17 on said temperature measured by a corresponding temperature sensor, wherein said
18 heating assemblies are controlled to heat at least two of said compartments to different
19 desired temperatures.

1 28. In a temperature control system having a system housing, a heating
2 compartment disposed within the housing, a heating assembly disposed within the

heating compartment and including a heating plate, a heater and a temperature sensor, and a controller for controlling the heating assembly, a method of heating medical items to desired temperatures comprising the steps of:

(a) partitioning said compartment into at least one receptacle via a selectively configurable rack structure to receive at least one item within said compartment;

(b) facilitating entry of a desired temperature for said compartment via said controller;

(c) applying heat to said heating plate via said heater;

(d) measuring a temperature of said heating plate via said temperature sensor; and

(e) controlling a thermal output of said heater via said controller to heat said at least one item to said entered desired temperature based on said temperature measured by said temperature sensor.

29. The method of claim 28 wherein step (c) further includes:

(c.1) facilitating even heat distribution within said compartment and to said at least one item placed therein via said rack structure.

30. The method of claim 28, wherein said rack structure includes at least one support affixed to a first wall of said heating compartment and a plurality of platform members attached to a second wall of said heating compartment, and step (a) further includes:

(a.1) selectively extending said platform members toward said at least one support to form said at least one receptacle for receiving said at least one item.

31. The method of claim 28, wherein said system housing includes a plurality of heating compartments with each compartment including a corresponding heating assembly and rack structure, and step (a) further includes:

(a.1) partitioning each said compartment into at least one receptacle via a corresponding rack structure to receive at least one item within that compartment;

step (b) further includes:

7 (b.1) facilitating entry of a plurality of desired temperatures each associated
8 with a corresponding compartment via said controller;
9 step (c) further includes:
10 (c.1) applying heat to each said heating plate via a corresponding heater;
11 step (d) further includes:
12 (d.1) measuring a temperature of each said heating plate via a corresponding
13 temperature sensor; and
14 step (e) further includes:
15 (e.1) independently controlling a thermal output of each said heater via said
16 controller to heat at least one item contained within a corresponding compartment
17 to said entered desired temperature associated with that compartment based on said
18 temperature measured by a corresponding temperature sensor.